Volume I May 1935 Number 3

DISEASES of the CHEST

Published Monthly by the Federation of American Sanatoria

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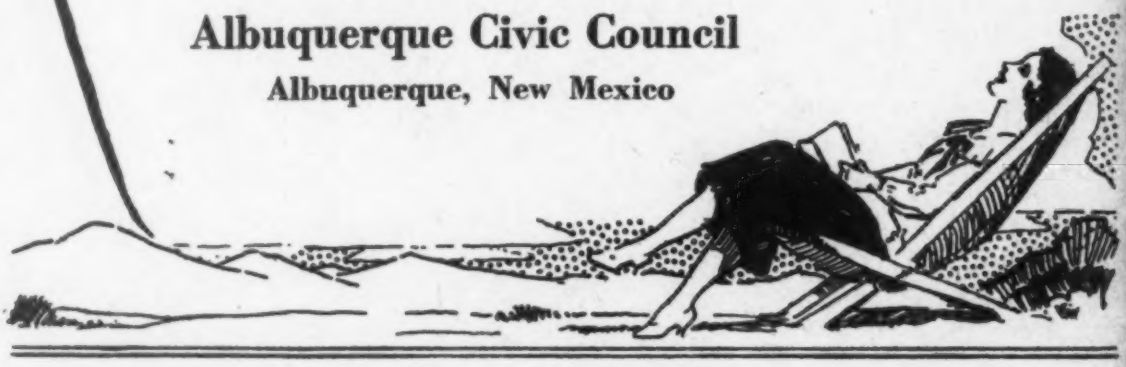

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Vol. 1 MAY 1935 No. 3

DISEASES OF THE CHEST

Official Organ of the Federation of American Sanatoria
Editorial offices 1018 Mills Building, El Paso, Texas
Business Address P. O. Box 976, Los Angeles, Calif.

C. M. HENDRICKS, EDITOR-IN-CHIEF

(A MONTHLY PUBLICATION)

"The most important factor in diagnosis in the majority of cases of pulmonary tuberculosis is keeping the disease in mind."
Lawrason Brown, M. D.

Editorial Comment

Tuberculin Skin Tests in Children

GREAT PROGRESS will have been made by the medical profession, at large, in case finding and early diagnosis, if we will employ one of these tests in our diagnostic regimen. Each patient with a positive skin reaction should be at once sent for an x-ray examination. The x-ray film should then be studied and in each instance by a Roentgenologist who is experienced in reading chest films, or by the Medical Officer of a tuberculosis sanatorium, or by a tuberculosis specialist for a correct interpretation.

This procedure should be adopted by every physician. To accomplish the most for the greatest number, every contact of a tuberculous patient should have one of these skin tests. If positive reactions occur in individuals that are not apparently contacts, the milk supply of the family should be inquired into and the herd should be immediately tuberculin tested.

By tuberculin testing the physician will discover many active cases of tuberculosis that otherwise would go on to moderate or far advancement before the case is found. There is no doubt that difficulties will be encountered, especially by the rural practitioner, where he will find patients reluctant to incur the expense of the skin test and the x-ray, as well as the fee for the interpretation of the plates. We feel, however, that in most cases the physician could solve the problem by arranging to have the plates studied and reported by some tuberculosis institution at no cost to the patient.

There are three types of this test: the Pirquet, Moro and Mantoux. The Moro test is by far the least sensitive, and has definite disadvantages for this reason.

The Pirquet test is made by scarification of the skin and the application of pure tuberculin with another scarification for control. If the Pirquet test is found to be negative it should be followed by an inter-dermal test (Mantoux) with a dilution of 1 in 100. In older children, if the inter-dermal test is still negative, it should be repeated with a dilution of 1 in 10.

The Mantoux test dilution of 1 in 10 should always be carried out with a control injection of the broth used in the preparation of tuberculin.

No Pirquet test should be regarded as positive unless there is at least one m.m. of erythema on each side of the scarified area.

The minimum required for a positive Mantoux test with any dilution is an area of erythema 10 m.m. in diameter, associated with some swelling to touch, or a well-defined erythema greater than this. Reactions showing an erythema 5 m.m. in diameter should be regarded as doubtful. If the reaction is doubtful on the fourth day, the test should be repeated with a stronger dilution than the control test. These tests are perfectly safe when the proper dilutions are used and any physician can develop the technique easily, as

all the reputable biological houses furnish these tests with full instructions for their application.

The physician in the field could render a great service to himself and his community by adding the tuberculin test to his diagnostic regimen, in that he would greatly reduce the mortality of tuberculosis. C. M. H.

Health Insurance and Tuberculosis THE AIR of the medical world is filled with talk of health insurance and state medicine. We need but follow the legislative articles in the Journal of the American Medical Association and its Bulletin to know that we, as a profession, are facing the most serious crisis in our history. The atrocious Wagner Bill before the National Congress, and the even more pernicious Epstein Bill which will be proposed in all state assemblies, are the products of the minds of sociologists who have delved into the report of the Committee on the Cost of Medical Care and have gleaned from it figures to suit their purpose.

The propaganda exploited by these sociologists has met a most receptive welcome at the hands of many discontented people who see the opportunity of getting something for nothing, and do not make an investigation of what they will actually receive under health insurance or of the cost of such insurance in taxes and payroll cuts.

Is the tuberculosis problem involved in this discontented attitude of the public toward the present system of medicine? Probably it is. Any chronic disease that costs so much in mortality and in economic loss — working time and money — must certainly be conducive to the general idea that perhaps a change would be for the better. The profession's record in controlling this disease—as good as the record is—seems to have been forgotten. The public wants to know what we will do with our tuberculosis problem *now* and *in the future*. It is to be hoped that this agitation will spur us on to a more determined effort toward early diagnosis and proper treatment so that the white plague may eventually be wiped out. We still have a long way to go. R.B.H.

Vital and Moral Resistance THE LONGER we observe and treat pulmonary tuberculosis, the more we realize that there are two important factors which we must take into consideration: vital and moral resistance. As yet we have no scientific means of measuring vital resistance, but any physician with experience and judgment can fairly estimate the vital resistance, as well as the moral resistance, which the wise and human Doctor knows well how to develop, if it be lacking.

Let the Doctor keep this ever before his mind, for as long as he has faith in the possibility of cure he can give hope and fighting power to his patient, if the patient is half a man, and by such psychotherapy he can accomplish miracles.

Would that some scientific investigator might find the measure of the vital resistance in any case and show us how to develop it. That finally we shall solve this riddle, I doubt not. Meanwhile it is in the power of any Doctor who takes a live interest in his patient and regards him as a human being and knows how to discover the secrets of his heart, to bring to him aid in his fight such as rest or surgery alone cannot give. Fill our patient's heart with hope, and we double the fighting force of every cell in his body. Teach him to smile, and we wake up a sunlight in his heart which is the best heliotherapy. Rouse his will power to co-operate with us, and our task at once becomes easier. What would the results of our sanatoria be if we could banish the many pitiful and unusually concealed anxieties and troubles which are too often gnawing at our patients' hearts and holding them back, and lessening their fighting force.

What discoveries the future may bring to us we cannot know, but while we are far from having attained the control over tuberculosis of which we dream, the results of the modern treatment are so good

that, granted an early diagnosis and that fundamental resisting power which the majority of our patients have, there is no excuse for pessimism in our attitude, save in the minority of cases. The hygienist by his prophylaxis is cutting down its incidence and improving the constitutions of those who may fall its victims. The general diagnostician is infinitely more capable of discovering its early manifestations than the very best man in our profession was thirty years ago, and the therapeutist, having thoroughly mastered the few but powerful measures at his disposal, is returning more and more well-trained, dependable patients to a normal, useful life. C. M. H.

Lime Starvation IT HAS become a by-word that the tuberculous individual is commonly a sufferer from lime starvation. Evidently the change brought about in the chemistry of the tuberculous favors the loss of calcium salts, and interferes, in some subtle fashion, with the capacity of the body to fix these minerals, and to retain them in the chemical economy. This condition is sometimes referred to as a "negative calcium balance."

One of the reasons that milk has become so important a part in the therapeutic dietary of the tuberculous is because it is, perhaps, the best and most convenient source of lime salts, and, as is generally acknowledged, lime is one of the most needed minerals in tuberculous disease.

The study of the mineral metabolism of tuberculosis, and the appreciation of the importance of lime starvation, have aroused considerable interest in the parathyroids. Some men believe that these little glands have a remarkably active lime-fixing power, or that they produce a mordant whereby the body is able to retain lime salts which otherwise would be excreted. It has been suggested by others that thyroid therapy with lime might be a useful procedure in the treatment of tuberculosis. Recent literature on the subject, however, has not been very encouraging. C. M. H.

Lung Abscess and Pulmonary Gangrene THE DIFFERENTIAL diagnosis between pulmonary abscess and pulmonary gangrene is very important. Many cases of pulmonary gangrene are diagnosed pulmonary abscess and vice-versa. Correct diagnosis has a marked influence on the prognosis of the disease.

It is well to remember that the sputum in cases of pulmonary gangrene is foul smelling, greyish brown or greyish green and contains characteristic oral spirochetes and fusiform bacilli, while in true cases of pulmonary abscess the sputum is a whitish yellow, muco-purulent or purulent, without appreciable odor and contains the usual pyogenic organisms, most often staphlococci. Statistics show that pulmonary gangrene occurs most always in adults and is three times as frequent as aspiratory abscess. It is seldom found in children; this age group shows a predilection to lung abscess. Pulmonary gangrene when recognized early can almost invariably be cured by the administration of arsphenamine, although pulmonary gangrene is a much more severe process than pulmonary abscess. There is conclusive evidence that pulmonary gangrene is caused by a group of organisms, notably spirochetes, fusiform bacilli and vibrios, aspirated from the oral cavity. The differential diagnosis therefore depends on a careful examination of the sputum.

C. M. H.

Nearing the Goal AS HOPELESS as it seemed twenty years ago, the protection of the population against the menace of the open case, is now nearing a realization. With seven hundred sanatoria and eighty thousand beds now available one can visualize what a marked effect on the incidence of tuberculosis could be had in the next generation if all these beds could be used for open cases only. We would then be approaching our long sought goal, viz; the principle of *contagious disease control.* C. M. H.

The Tuberculosis Patient

BY
LeROY S. PETERS, M.D.
Albuquerque, New Mexico

WHEN TUBERCULOSIS is suspected by an individual or when this same patient feels run down and in need of a spring tonic, the family physician flashes before the mind and is immediately consulted. We assume that all family physicians are good doctors. We take it for granted they are painstaking and thorough in their examinations. We believe when they are ready to impart their conclusion to the invalid they have given the best advice that is within their ability to render. And if we are right in our assumptions, the patient is fortunate indeed.

However, we must be wrong in admitting that all family physicians are careful doctors.

Else, why do 80 per cent of tuberculous patients discharged from one institution of excellent standing die within three years of discharge?

Why are 60 per cent of cases coming west in search of climate in the far advanced stage of the disease?

Why do 47 per cent of these same patients die within six months of arrival?

The answer to the foregoing questions is: Lack of early diagnosis. Tuberculosis to be cured must be diagnosed early. Ninety per cent of early type cases get well, the other ten per cent die because of poor advice or because they did not take good advice. The family physician is the first line of defense against a beginning tuberculosis. If he fails, the story is a long drawn-out fight against overwhelming odds, usually ending in hopeless invalidism or, far better, the grave.

Too many busy practitioners are heedful of their time at the expense of the patient. They ask a question or two, write a prescription, walk to the door, and ask for the next victim, all in the space of a few minutes. The individual seeking advice may have had nothing organic the matter or he may have been dying of cancer. As far as his doctor's contact with him was concerned, certainly the doctor was none the wiser. One cannot see dozens of patients in the course of an afternoon at the office and give intelligent advice.

A medical friend of mine once said: "Deliver me from the busy doctor. He never has time to find out what's the matter with a patient." And there is much to be said on that side. On the other hand, if we selected our medical adviser by that rule, we should no doubt take up with one who had little practice due to his natural dumbness. In the final analysis, the patient and not the physician gets the wrong end of the wishbone.

What the reliable and competent family physician needs to remember is to give sufficient time to the new patient to arrive at some definite conclusion. If today is too full of work, have him come back. No one is expected to make a diagnosis in one interview unless a label from objective symptoms stares you in the face and only a blind man could miss it. A carefully taken history is a big asset. Only recently a boy came to my office giving a history of having been treated by three physicians over the past two months for a bronchial cold. From the history, it was easily learned that shortly after his cough began he suddenly spit up a large quantity of foul-smelling and foul-tasting pus. Physical examination revealed numerous rales at the lower angle of the scapula, and X-ray confirmed the diagnosis, made from the history alone, of abscess of the lung.

Too many cases of lung abscesses are given the diagnosis of bronchitis, early tuberculosis, and what not. Careful checking by X-ray and laboratory, and in the majority of cases by history alone, will help to make the diagnosis positive.

Another bugbear is the toxic goitre. My records are full of patients with this condition sent west for an early tuberculosis simply on the finding of a low-

grade afternoon temperature and a rapid pulse. The X-ray and physical examinations are both negative as far as tuberculosis is concerned, yet a pulse rate and temperature chart is sufficient for the busy man to hang tuberculosis on the victim, when a further study would have revealed the true state of affairs.

Beware also of the case of bronchiectasis. This has labeled many unsuspecting people with pulmonary consumption. Here X-rays with lipidol and carefully checked sputum give vast information and save the doctor much embarrassment.

Malignancy of the lung is more cause for grief, and here one may be pardoned for thinking of everything else until the X-ray begins to tell the story. However, one's inability to pin a definite diagnosis in an obscure pulmonary affair should suggest new growth as a plausible possibility.

The rarer lesions due to fungi need worry no one. They are met so infrequently that confusion seldom results.

Pulmonary fibrosis due to occupational diseases as silicosis and pneumokoniosis are usually cleared up by history, X-ray and laboratory examination.

Now let us consider the great stumbling block in differential diagnosis, namely, the case of chronic nervous exhaustion. For years I have maintained that there are born into this world people with subnormal endurance. The gentler sex predominates, but males are also encountered. They present a symptom complex that in itself is almost diagnostic. After you have listened to their story you might as well conclude that no organ of the individual's anatomy has escaped untouched. The numerous aches and pains begin with the hair on the head and end at the toe nails. Chest pains come in for their share of the picture, and especially a pain at the angle of the scapula. This is so common and so constant after exertion that I choose to call it a fatigue pain. Add to this vast array of symptoms a low-grade afternoon temperature, plus under-nourishment, a mildly accelerated pulse on exertion, and marked fatigue at the end of the day, and you will find that 90 per cent get a diagnosis of pulmonary tuberculosis, usually of the hilum type, hung onto them; this in the absence of X-ray, physical or laboratory findings to back up the assumption. A carefully taken history will show that the majority of these patients have been in this same chronic state for years. This fact alone should make one suspicious that organic disease does not exist. True, all patients of this type should be carefully studied and other possibilities such as toxic goitre ruled out before definite conclusions are reached. This class of patients makes for excellent sanatorium results and I suppose their incarceration in an institution temporarily saves them from the surgeon's knife, since this branch of medicine usually removes most of their internal workings in a vain endeavor to cure all their imaginary ills.

The foregoing remarks on differential diagnosis are offered to show the family doctor the errors that come to the specialist in pulmonary disease, and not with the idea of making a phthisiologist of him.

It is much better to err on the right side than the wrong, but it is also unfortunate to hang a diagnosis of tuberculosis on an individual in whom it does not exist.

The general practitioner must of necessity see the patient first in the majority of cases. He must exercise ordinary intelligence in the management of the case. He may in justice to himself and patient watch the early type for a time, and if improvement is consistent keep on with the case. If not, reference to a specialist is indicated.

The progress in the treatment of tuberculosis in the past decade has been so rapid that the general practitioner could not be expected to keep pace with it. That, however, does not excuse him from availing himself of the benefit of consultation.

To the old regime of rest, fresh air and good food has been added the so-called compression therapy. In the early days

(Continued to page 21)

Cough*

BY
CHAMPNEYS H. HOLMES, M.D.
Atlanta, Georgia

HIGH AMONG that select group of cardinal symptoms to which flesh is heir, such as pain, nervousness, constipation, weakness, and fever, ranks one that I now wish to discuss, namely, cough.

A modern standard dictionary defines the act of coughing as expelling air from the lungs in a spasmodic or noisy manner. Physiology explains it as a reflex act arising in the respiratory tract and transmitted largely by the vagus nerve to the respiratory center in the medulla. The act may be independent of this reflex arc as exemplified by one's ability to cough voluntarily. In this presentation, however, I am concerned particularly with the significance and clinical characteristics of cough. Suffice to say that cough in most instances has its origin in the respiratory tract and usually indicates anomalous conditions therein. An exception to this is the nervous or psychic cough. This cough is unproductive, that is, produces no sputum, is rather shallow or hacking in type and oft repeated. It is frequently accompanied by abortive clearing of the throat. On a number of occasions I have encountered this cough in individuals fearing or suspecting tuberculosis in themselves but where none existed. It occurs in other nervous and hysterical conditions.

Other exceptions would be the stomach, aural, and uterine cough. I have heard of all these (the former particularly through lay channels) but no such cases have I seen proved to my complete satisfaction. Cough may be a prominent and at times a diagnostic symptom in cardio-circulatory disease and in media-stinal tumors, including aneurism of the thoracic aorta. In these conditions the pathology of paramount import lies outside the respiratory tract; but the cough results from secondary disturbances there—passive congestion and pressure. The cough in cardio-circulatory disorders due to passive pulmonary congestion is often productive, is increased by exertion, and produces a frothy and at times rusty expectoration. Bloody sputum is occasionally seen particularly in cases of mitralstenosis. In passive congestion medium moist rales over the lung bases is almost a constant finding. The stenotic cough produced by pressure on the trachea and superior laryngeal nerve by aneurism and growths; and that in laryngeal obstructions, such as laryngeal diphtheria, may be characteristic. The so-called brassy cough is very striking and once heard is not easily forgotten.

Wherever the symptom cough is encountered it behooves the doctor to explain it. The explanation may be very obvious or may require for its solution a painstaking examination including laboratory and X-ray examination. To enumerate the causes of cough would be to enumerate all the diseases and disturbances of the respiratory tract, since irritations or inflammations from the nasopharynx to the pleura may be responsible.

In the investigation of a cough certain pertinent questions are important, such as duration, whether or not it is productive and, if so, character of expectoration; frequency; character, and the time of day or night it occurs. For example, the significance of a cough of several days' duration is vastly different from that of one lasting several months or years. The former may be associated with a benign upper respiratory infection — the latter suggests a more serious infirmity, such as pulmonary tuberculosis. In fact, any cough lasting three months or longer should be considered due to tuberculosis until proved otherwise. Likewise, a severe cough accompanied by copious and foul sputum strongly suggests lung abscess, bronchiectasis, or gangrene and more rarely ruptured empyema and hepatic abscess. In all cases of cough with exces-

*Read before the Wesley Staff Meeting, Mar. 13, 1931.

sive muco-purulent sputum carefully examine the paranasal sinuses. In my private practice such an association excluding tuberculosis has been my most frequent finding. A cough with considerable mucoid expectoration and largely limited to the early morning hours is suggestive of bronchial affections. The bronchial catarrh from excessive smoking frequently produces such a picture and in city dwellers the sputum is often brownish to black from the contained carbon. A cough upon retiring is often seen in upper respiratory and laryngeal irritations. A cough during the night and early morning suggests the possibility of tuberculosis. A cough accompanied by hemoptysis is always to be considered as due to pulmonary tuberculosis until otherwise proved.

In several instances more or less characteristic cough is associated with certain diseased or disordered states. Heading this list is to be found the cough of pertussis with its paroxysmal episodes, the characteristic whoop, the suffusion of head and chest and vomiting. It is not strictly duplicated in any other condition. In many conditions cough occurs in paroxysms and this is especially true where there is considerable bronchorrhea. Vomiting following hard coughing is very common. In cases where the sputum is foul the patient often attributes the vomiting to this fact, and very likely this is often true. A very characteristic cough is often seen in cases of pleural irritations and where there is a formation of an exudate. This cough is shallow and may be extremely frequent, at times almost at every breath. In an acute irritation of the larynx and trachea cough may be hard and frequent. Such a picture is seen for instance in the following: strangling from fluid in the trachea, irritating gases and vapors, foreign bodies in the upper respiratory tract, misdirected stomach tube, and when one fails to remove excess of a strong silver nitrate solution from a swab. The cough following an aspiration of the pleural cavity may be harassing and require a hypodermic of morphine for relief. This cough is also hard, oft repeated, and may or may not be productive. The cough associated with lung abscess, bronchiectasis, and the large secondarily infected cavities in tuberculosis is usually severe, racking and productive of much muco-purulent and foul secretion. It has a tendency to occur in paroxysms.

The hard, rasping cough of measles, the croopy, deepseated or barking cough of an acute bronchitis, the shallow restricted cough of pneumonia, the slight hacking cough of early phthisis, are familiar to us all. If the patient is not coughing at the time of your examination have him do so and an opportunity to study its character is made. Note the effect of a change in position of the patient. This is very striking in cases where there is a movement of a fluid element as for instance in cavity, abscess, and hydro or pyo-pneumothorax. Usually lying on the sound side produces violent coughing but at times the reverse is true.

While the so-called hacking cough is usually associated with tuberculosis and it is true that early tuberculosis is often characterized by such a cough, there is no typical cough of tuberculosis. There are a few axiomatic statements that I might make. In beginning tuberculosis there is no cough. There may exist advanced disease and patient complain of no cough. Far advanced and active disease in most instances produces considerable cough. A slight dry cough is the usual thing in early disease. Marked cough with much expectoration means that the disease has progressed far beyond the stage of incipiency.

In these days of increased indulgence in tobacco, smoking has to be reckoned with as a common cause of cough. Often, however, an individual will abuse himself in the false security of a "cigarette cough" when in reality the cough results from pulmonary tuberculosis. However, smoking does produce cough or increases the cough present from some other existing condition. Omitting smoking will at times reward both doctor and patient with brilliant results. Changing the brand will at times afford some benefit.

Cough as indicated in its definition and physiology is a defense mechanism, nature's effort to free the respiratory tract of noxious agents. As so often happens nature's effort may overshoot the mark and the defensive role becomes offensive or destructive. Cough may be very annoying or even painful, interfering with the patient's rest and sleep — and often with that of his neighbors. It is a considerable waste of energy and produces wear and tear upon the sufferer. It has been estimated that the energy in a day of hard coughing is equal to that consumed in climbing a tall mountain. Only cough which sweeps offending material from the respiratory tract serves any useful purpose and an attempt to repress all other should be made.

The treatment of cough naturally depends to a large extent upon its cause. The best cough medicine for the cough in early tuberculosis is bed rest. Laughing, loud talking, getting chilled, becoming overheated, faulty ventilation, insufficient fresh air, all tend to increase cough and therefore the proper regulation of these factors should be given much consideration in one's therapy. The exercise of the will-power is very effective in controlling cough in many instances. A few swallows of water will at times cut short a coughing spell. In cases of abscessed cavities with broncho-fistulae nothing gives as much relief and freedom from cough for hours as postural drainage. In many cases of chronic diffuse bronchial affection such as those associated with asthmatic states, emphysema, bronchiectasis, chronic sinusitis, etc., I have obtained nice results by the prolonged exhibition of mixed catarrhal vaccine and exposure to the ultra-violet rays. Also in these cases some form of iodine and calcium has seemed of value. When the general health has been undermined, as in the chronic cases, attention to the upbuilding of the patient is necessary to secure the best results. Various hardening processes, cold douches to the chest, graduated sun baths, all have their place in the therapeutic regime. Among the drug measures we have recourse to sedatives, opiates, expectorants, lozenges, inhalations, sprays, and applications to the chest. Digitalis will often clear up a so-called bronchitis. This last statement prompts me here, before I conclude, to make a digression, and it is this. More and more as our diagnostic procedures and understanding improve, the ranks of chronic bronchitis dwindle. We are coming to find that these cases are proving to be ones of overlooked tuberculosis, mild bronchiectasis, asthmatic states, pulmonary neoplasms, and a weakening myocardium.

This concludes my discussion of this subject, cough. I have attempted no exhaustive monograph on the subject and realize it is sketchy and leaves much to be said. I have attempted merely to call attention to some of the clinical and practical aspects that I have observed in my own experience, and which I hope will be of some help to some of you.

MACKLIN, CHARLES C., M. D.: The Dynamic Bronchial Tree. Am. Rev. Tuberculosis, 1932, xxv, 393-417.

An attempt is made to visualize the *locus* of pulmonary tuberculosis. The purely conducting part of the bronchial tree (that is everything up to, and including, the fine, smooth-walled bronchioles) is envisaged as undergoing a lengthening with inspiration and a shortening with expiration, and the details of this process are explained with diagrams. The peculiar shape and mode of action of the pleural cavity make it necessary to shift the lower part of the lung during inspiration in a downward, forward and outward direction, if the part above and behind the hilum is to expand properly. The root of the lung is of very great importance in this movement, of which the reverse phase is seen in expiration. It is suggested that the normal flexibility of the root may be impaired from disease processes, and that this will hamper lung ventilation, especially in that part lying above and behind the hilum. The advisability of ascertaining the normal range of movement in the root, particularly in children, is stressed, and the possible relation of interference with this movement to pulmonary tuberculosis advanced. (Author's abstract.)

Laryngeal Tuberculosis and the Electric Cautery

BY
W. E. VANDEVERE, M.D.
El Paso, Texas

TUBERCULOSIS IN any form is of vital importance to all physicians. Laryngeal Tuberculosis is of especial importance to the Laryngologist who practices his specialty in a health center or is on the staff of a Tuberculosis Santorium. Modern treatment of Laryngeal Tuberculosis has been so successful that we laryngologists should now assure the management of this complication.

Etiology

Laryngeal tuberculosis is to be found in a rather large percentage of cases of pulmonary tuberculosis and in most cases is secondary to that condition. Statistics show that laryngeal involvement varies from 12 to 45 per cent, depending on whether the pulmonary condition is an early or advanced one. The infection is thought to take place most often through the lymphatics, or from infected sputum passing over an abraded surface of the mucous membrane.

Symptoms

A patient with pulmonary tuberculosis who experiences change in the quality of the voice coming on gradually after cough or excessive use, or whose voice tends to tire easily, often exhibits early symptoms of laryngeal involvement. Pain depends much on the location of the lesion. The vocal cords and other structures within the larynx may be seriously involved, with little pain; while a slight lesion of the epiglottis or aryepiglottic folds might produce much discomfort. Acid foods and liquids cause the pain.

Pathology

The earliest lesion to be seen is a slight thickening of the mucous membrane, which becomes more prominent on phonation. The early lesion is more often seen in the posterior commissure or interarytenoid space, and next most often on the vocal cords. Regardless of location, the first evidence noted is an infiltration, then an edematous swelling in loose tissue, and later an ulceration. Stephens (7) defines tuberculosis lesions in the larynx as consisting of infiltrations, ulcerations, perichondritis and tuberculomas. Tuberculosis in the larynx, as elsewhere, begins in the formation of a tubercle. The mucous membrane over the tubercle becomes destroyed and an ulcer results.

According to most authorities, when the tubercle bacillus comes to rest in a tissue, the fixed connective tissue elements are stimulated, causing a production of epithelioid cells. These cells clustered around a central area are elongated in shape and form the most constant feature of a tubercle. This cluster of cells is surrounded by an inflammatory zone of mononuclear cells, lymphoid in type. In the center of this mass is often found a giant cell, consisting of a large mass of protoplasm containing many nuclei. Such a tubercle is without blood supply and the center undergoes necrosis, due as much to the lack of blood supply as to the toxins of the tubercle bacilli. Healing of such an area may take place by the deposit of calcium salts in the necrotic area and the formation of a dense surrounding capsule, or by a stimulation of the fixed connective tissue cells and a changing of the epithelioid cells into fibroblasts, whereby fibrous tissue is formed in sufficient amounts to encapsulate the lesion. Ulceration and infiltration are superficial until secondary infection takes place.

Diagnosis

In a lesion of the larynx, the three conditions most often confused are tuberculosis, syphilis, and cancer. It is possible for any two or all three conditions to be present at the same time. However, in

the great majority of cases, a laryngeal lesion is tuberculous if there is tuberculosis in the lungs. A syphilitic ulcer is sharply defined with clean-cut edges, and the Wassermann and therapeutic tests are of decided value. It is not always easy to distinguish a malignancy from a tuberculous lesion, because it is not uncommon to have a cancer in a patient suffering from tuberculosis. A cancer is more prone to attack the middle or anterior third of the vocal cords, while tuberculosis primarily attacks the posterior commissure and adjacent parts. Biopsy would be positive but is dangerous in tuberculosis and also in cancer, unless one is prepared to do the necessary surgery at once.

Prognosis

It has been stated that tuberculosis of the throat diminishes a patient's chances of recovery by nearly 50 per cent. Forty years ago, Morrell McKenzie stated: "It is not certain that any case of tuberculosis of the larynx has ever recovered."

Tuberculosis of the larynx, as a rule, progresses much in keeping with the condition of the lungs, although there is many a patient whose larynx has steadily improved while his lungs were growing worse. This is frequently true under present-day treatment. However, a laryngeal involvement is always serious and especially if extrinsic and involving the epiglottis and aryepiglottic folds.

Modern treatment has greatly improved the outlook in laryngeal tuberculosis.

In studying the lists of patients cared for during the past several years in El Paso's institutions for tuberculosis, I am surprised at the small percentage who have had laryngeal tuberculosis. At the William Beaumont Army Hospital there have been admitted 2,450 cases of tuberculosis since 1921, and of that number only 80, or 3¼ per cent, were diagnosed as having laryngeal tuberculosis. Most of these patients were ex-service men, varying in age from 30 to 50 years, with a rather high degree of immunity.

The private sanatoria of El Paso: Hendricks-Laws, Homan, Long, Price, and St. Joseph give percentages of laryngeal tuberculosis varying from 12 to 20 per cent. In 2,066 cases of tuberculosis treated in Homan's, 13.2 percent had laryngeal tuberculosis. In a summary of 500 cases St. Joseph Sanatorium reports 7 per cent who had definite ulcerative lesion and probably that many more who had infiltrations. Hendricks-Laws Sanatorium reports that 12 per cent of their patients have had some degree of laryngeal tuberculosis.

Treatment

An early diagnosis goes far in the successful treatment of laryngeal tuberculosis. The laryngeal mirror should be used whenever an examination of the chest is suspicious or positive for pulmonary tuberculosis, and the throat should be examined once each month thereafter as long as the pulmonary lesion is active and advancing.

A large percentage of very early cases will clear up merely by rest of voice together with proper general care. In these early cases the patient should be put on whisper, and if definite improvement does not follow in two or three weeks, then the doctor should insist upon silence and the use of pencil and pad. These cases many times are greatly benefited by exposure of the larynx to sunlight by means of the metal Verba mirrors. If, in spite of these methods of treatment, the infiltration increases or an ulcer develops, or if an ulcer is present at the first examination, there is no therapeutic agent known to science at this time which approaches in effectiveness the electric cautery. Most of the country's leading laryngologists highly favor this method of treatment. All value rest of the larynx above everything else, but, when this is not effective, we have a remarkable agent in the electric cautery.

Fetteroff (1) mentions the experimental work done by himself and George B. Wood in 1910 and 1911. Guinea pigs were inoculated with the tubercle bacilli and the resultant lesions cauterized with the electric cautery. It was found that an inflammatory zone developed around the

area destroyed—newly formed blood vessels and fibroblasts. In six days the reaction was more marked, blood vessels were more numerous and there were larger deposits of fibrous tissue between the epithelioid cells and the tuberculous mass. In twenty days the lesions were almost healed. They concluded that any thing which aids the cicatrization of a tuberculous nodule by the formation of fibrous tissue is of definite value in the cure of the disease.

Pryor (2) regards rest of the voice as the most valuable procedure in the treatment of laryngeal tuberculosis, regardless of what other type of treatment is used. He also mentions the sunlight treatment by the use of the Verba mirrors manufactured in Colorado Springs. There are some cases which this type of treatment does not help, and it is in such cases he relies on the electric cautery. He states that with this agent most spectacular results are noted in the relief of pain.

Kellam (3) states that the specific results following the skillful and judicious use of the electric cautery in the treatment of laryngeal tuberculosis, bear a similar relation to this complication as insulin to diabetes and arsphenamine to syphilis. He concludes that the electric cautery has largely superseded curets, heliotherapy, and acid applications, in the treatment of tuberculous ulcers, infiltrations and granulations, and that the pessimism which heretofore has doomed every case of ulcerative laryngeal tuberculosis to death is not justified.

Terry (4) follows one of two lines of treatment when a diagnosis of laryngeal tuberculosis is made — rest of voice, or electric cauterization. Disturbing the patient for frequent examinations or various local applications is as much contra-indicated as the too frequent removal of surgical dressings from a healing wound. The electric cautery is the best method of treating the tuberculous lesion which fails to yield to voice rest. With early lesions, complete healing is the rule after a few cauterizations. With most of the advanced cases it is the most efficient method for the relief of the excruciating pain and enables the patient to take much needed food. Many times healing will take place following cauterization of extensive lesions.

William C. Warren, Jr. (5) thinks all laryngeal tuberculars should be in a sanatorium so as to carry out properly silence treatment, and if this does not cause improvement then the electric cautery should be used.

Looper and Schneider (6) state that, for the active treatment of the tuberculous larynx, they have found the use of the electric cautery most beneficial and employ it in preference to all other methods. Early cases clear up after two or three treatments and advanced cases show marked improvement after a few cauterizations. In severe and hopeless cases, the cautery is of great value for relief of pain and coughing. Many local applications have been tried and abandoned. In the treatment of 500 cases of laryngeal tuberculosis, the electric cautery was found to be the best treatment and, of all cases, 65.5 per cent were improved and healed, and 26 per cent were improved and healed in far advanced cases.

Stephens (7) states: "Of all methods of local treatment none is so productive of benefit as the electric cautery."

Glenn and McGinnis (8) speak of the good results obtained by many men in treating tuberculosis of the larynx with electric cautery, but prefer the use of the water-cooled mercury quartz light by means of specially made laryngeal mirrors, because this method requires less expert manipulation of instruments.

Spencer (9) states that electric cauterization offers a valuable means of destroying both ulcers and tubercles and it is doubtful if any method of treatment has yielded better results than cautery.

Sharp (10) recommends vocal rest for all patients who have definite signs of tuberculosis in the larynx, and the electric cautery where there is a tuberculoma, infiltration, ulceration or edema. The quartz light has not been of value to him.

Muskat (11) considers, in the combat of laryngeal tuberculosis, rest of the voice most important, and the electric cautery when this has failed.

Briggs (12) says that the electric cautery is proving by far the greatest means of combating the lesions of laryngeal tuberculosis and especially when other treatments are not promising.

Green (13) has done much work in treating laryngeal tuberculosis with the electric cautery and is getting excellent results.

Looper (14) states that with the electric cautery we can accomplish in one application what could be gained by weeks of silence, and, as soon as a tuberculous lesion of the larynx is recognized, cauterization should be applied if the patient's general condition will permit it.

Brown (15) considers the electric cautery the best therapeutic agent we possess in tuberculous ulceration of the larynx.

Sir St. Clair Thompson (16) speaks of the older writers' considering the recovery from laryngeal tuberculosis as improbable as we now consider recovery from tuberculosis of the meninges. Early cases are given two or three months of silence before resorting to the cautery. When healing is stationary or slow, or where the patient is not able to wait the necessary time, the cautery is used. Of 477 cases of laryngeal tuberculosis, twenty-three recovered with silence, fifty on whisper and forty-six with the use of the electric cautery.

Wood (17) states that the electric cautery is undoubtedly the best surgical method of treating laryngeal tuberculosis, and the results attending its proper use have taken this disease out of the list of laryngological nightmares. The object of cauterization is the production of a scar rather than the destruction of all tuberculous tissue, and this fact makes the procedure a comparatively minor affair. With the possible exception of very large tuberculomata and completely diseased epiglottis, all the clinical types of localized tuberculous lesions are more successfully combated by the cautery than by any other form of treatment.

In my personal experience during the past three years, I have seen close to a hundred cases of laryngeal tuberculosis, and of this number have used the cautery in about 50 per cent of the cases. In the early cases, rest of the voice will often effect a cure where there is a tendency for improvement of the pulmonary lesion. Many of these cases have received definite relief by use of the Verba laryngeal mirror, which enables the patient to reflect the sun's rays into his larynx. Often very painful throats experience a sensation of warmth and comfort after the use of heliotherapy. It has been my practice to subject patients to rest and heliotherapy unless there is ulceration present on first examination or one develops in the course of more conservative treatment. I then use the electric cautery. However, I am coming to believe that many cases of infiltration would more quickly heal if the sharp-pointed cautery were used early and plunged into the more prominent areas of infiltration. In ulcerations I have little faith in applications, rest of voice, or any other treatment except the electric cautery. I grant that a few such cases get well by the treatment of "watchful waiting" but the healing process is greatly hastened by use of the cautery in the early and moderately advanced cases, and the relief from pain in the far-advanced cases is more pronounced than by any other method at our disposal. All of us see cases who seem doomed from the start—patients who have little resistance and whose pulmonary and laryngeal lesions advance in spite of all that can be done. These are the cases we can often give the most wonderful relief by use of the cautery. However, in the very sick patients, we must be careful not to overtax them with too many applications. These patients are often given relief by the application of the cautery to one or two painful areas.

Technic

Except in the very nervous and apprehensive patient, no preliminary medication

is used. At times we have given 1/8 or 1/6 gr. morphine by hypo, three-quarters of an hour before using the cautery.

The very sick patients are allowed to remain in bed, as the illumination and necessary instruments are easily arranged by the bedside. The indirect method is far preferable to the direct and just as easy after a little practice. A 10 per cent solution of cocaine is applied lightly to the pharynx and soft palate, and with a curved applicator 10 per cent cocaine is then applied to the epiglottis. In a few minutes the arytenoid and posterior commissure are touched and, if the vocal cords are involved, they are also cocainized. As a rule, anesthesia is sufficient after 10 minutes; if not, more cocaine is applied. For the deeper ulcers and infiltrations, a sharp-pointed cautery tip is used, and for the broad ulcers, a rather flat cautery. In this first case the cautery is plunged rather deep into the infected tissue; while in the second, the ulcer is seared rather superficially. The point should be heated almost white hot so the tissues do not stick to it. It is the reaction to the burn, and not the destruction of all the tuberculous tissue, we seek, and for that reason we should be gentle in our manipulations, and make it a point to do too little rather than too much. From one to five cautery applications are, as a rule, all the cauterization we should do at one sitting. The procedure may be repeated in two to four weeks. One should avoid cauterizing deeply in the region of the cartilagenous joints, especially the crico-arytenoid, for fear of producing an ankylosis.

As a rule, pain and discomfort are markedly relieved after use of the cautery. At times, there is some pain for a day or two, requiring sedatives, but this is seldom the case if we do not attempt to do too much at one sitting.

Since using the cautery, there are few cases I feel are hopeless until I have tried this method, and these hopeless cases are generally much relieved, both physically and mentally, by its use. I have seen a few far-advanced cases get entirely well by the use of the cautery.

Summary

1. Laryngeal tuberculosis is a complication of pulmonary tuberculosis in from 12 to 45 per cent of cases, depending on the severity of the pulmonary lesion.

2. The tuberculous lesion is healed by the deposit of calcium salts in the necrotic areas and by an increase of fibrous tissue which develops from the fixed connective tissue cells, and probably by a changing of the epithelioid cells into fibroblasts. Such healing processes are encouraged by an increased blood supply.

3. Rest is important in all cases of laryngeal tuberculosis. The electric cautery is used in all tuberculous ulcers, and infiltrations which do not despond to rest of the larynx. Heliotherapy is used in many cases.

4. The electric cautery heals, not by the destruction of all tuberculous tissue, but by the development of an inflammatory zone in which newly formed blood vessels and fibroblasts are produced, which hastens healing by cicatrization.

5. Most early cases heal with the cautery, while the advanced cases are relieved of pain.

6. Electric cauterization is a minor procedure, done best under cocaine anesthesia and by the indirect method.

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Sanatorium Versus Home Treatment For Pulmonary Tuberculosis

BY
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TO INTELLIGENTLY discuss this subject, we must have clearly in mind the treatment of pulmonary tuberculosis as it is understood today.

Scores of specifics for the treatment of this disease have been tried and all have been found wanting. Notwithstanding, pulmonary tuberculosis is recognized at the present time as the most curable of chronic diseases. It is cured not by specifics or medicines, but by a mode of life, dependent upon a clear visualization of the patient's disease processes and by an intelligent supervision of all the details which have to do with the physical exertion and the mental and emotional reactions of each individual patient.

Since the disease is individual in its manifestations, the treatment must be individual. The first essential in the treatment is to control the mental and the emotional state of the patient, without which the physical reactions cannot be controlled. To carry out these essentials, we must first be able and have an opportunity to thoroughly study the patient and his disease processes and, in addition, we must be able to place the patient in an environment that will assist him to the fullest extent in adjusting his psychic reactions to the circumstances.

Does the home or the sanatorium, then, offer the best circumstances for the treatment of the patient with pulmonary tuberculosis?

Dr. E. B. Emerson of Rutland Sanatorium says, "The first step in the treatment of a tuberculous patient is his education, carrying home to him the truths of all he must know and apply with all the zeal that he lives his religion."

It is the uncertainties in life that make us worry. So it is with a tuberculous patient. The truth may be a shock to him at first, but, at the same time, it is this truth which establishes that bond of confidence that must exist between patient and physician and that enables the patient to relax and take the cure with an enthusiastic optimism.

To properly educate the patient who remains in his home is about as difficult as it is to secure a college education without going to college. If the patient is to develop new health habits, they must be repeated and rehearsed and exemplified as in an institution. In the home, the busy physician, through lack of proper opportunity for adequate observation and study of the patient, is seldom able to outline the necessary regime. Under those conditions, the meaning of the word rest or the word cure for those sick with tuberculosis is not fully explained or appreciated nor are definite rules laid down or followed. In other words, the essential details which, in general, determine whether the disease retrogresses or progresses are most often neglected.

Again, in the home there are countless things that arise in a life under such conditions which tend to upset and disturb the patient so as to make it next to impossible for the average person to follow a correct regime even if it were outlined. At home, the patient is alone among well people who have little or no realization of the number or importance of the limitations that must be placed on the patient or the length of time that these limitations must be carried out.

A person sick with tuberculosis, as a rule, is unusually nervous and easily upset so that even devoted members of the family living, especially for long periods, under the same roof, due to their failure of appreciation of the patient's condition, may be, and often are, sources of serious disturbance.

Likewise, in the home, well-meaning as well as curious friends flock to see the patient. They feel it their duty to entertain him by relating all the latest and most exciting gossip as well as their own

troubles and, also, they must offer their own opinions as to what the patient should do. They leave the patient exhausted physically and nervously and with his faith in his doctor and the treatment he has outlined faltering. The average family, for fear of giving offense or for other reasons, is helpless in the control of visitors.

In addition, at home the patient is the recipient of all the disturbing trivialities that take place in every family.

Finally, in the home, because of lack of understanding, the usual slight upsets in a patient's condition bring terror to all the household as well as to the whole neighborhood, with the resulting serious upsets in the calm and confidence of the patient.

In considering this subject it should be understood that a sanatorium is not just a place for the patient to sleep and board and have the more or less impersonal attention of a nurse and a physician. It is an atmosphere in which contentment is the dominant factor, and this atmosphere reflects the character of the physician in charge.

When a patient leaves home to go to a sanatorium, he does so, for the most part, with the feeling that he is going to give himself a better chance to get well than he would have at home. This feeling is enhanced by new scenes and surroundings which inspire an enthusiasm which is often found wanting in the confines of the home. The feeling on the part of the patient after reaching the sanatorium, that he is in an environment of mutual sympathy and moral support, makes it easier for him to reconcile himself to the detailed routine of the cure. Under these conditions, he is more likely to be endowed with that "will to recover," and this "will to recover" on the part of the patient is a powerful weapon in the hands of the physician who appreciates it and is schooled in the art of maintaining it.

The patient in a sanatorium profits by the examples and mistakes of the other patients, and the power of these examples and the power of the correct mass psychology are a tremendous force in bringing about a reconciliation and an adjustment to the necessary routine. Education and information acquired in such an atmosphere are the keystone to the discipline which is so essential in the proper treatment of pulmonary tuberculosis.

Grouped as the patients are in a sanatorium, the physician has more time and opportunity to study them and to understand their individual disease processes and their psychical reactions. As a result, he enters into his work with an enthusiasm which inspires confidence.

Again, the intelligent sanatorium nurse, through her training and experience and by a virtually twenty-four hour contact, understands the tuberculous patient and contributes to an inestimable degree to the ability of the physician to properly understand and direct his patients.

In the sanatorium the patient has a much greater opportunity to be protected from the nervous and over-anxious members of his family and the disturbances which occur in the ordinary routine of the home. The patient's friends and relatives are made to understand that he has just one business and that is to get well and that he is not there to visit or be visited or to entertain or be entertained or advised by them.

Finally, in the sanatorium the patient learns that flareups in the course of pulmonary tuberculosis are more or less the rule and when these occur in his case, his reaction is entirely different from that of the patient having a similar experience in a home environment.

In conclusion, I realize that there are not at the present time facilities for all patients with pulmonary tuberculosis to take the cure in sanatoria. But I do feel that when the public and the medical profession, as a whole, appreciate the value of patients' having an opportunity to at least begin the cure in a sanatorium, that is, a sanatorium which is worthy of the name, and thereby learn the details essential for their recovery before they are advanced cases or hopelessly ill, the results of the treatment of pulmonary tuberculosis will be vastly improved.

Transfusion of Blood in Tuberculosis*

BY
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THE REPORT of this small group of blood transfusions in tuberculosis is presented in the hope that it will stimulate both discussion and use of an agency in the treatment of tuberculosis which we believe has a greater value than it has been credited with. The suggestion came from our laryngeal department that the pallor of the pharynx and larynx, with or without mucous membrane lesions, which is so common in the tuberculous throat, might suggest the use of transfusion. The cases selected presented symptoms such as hemoptysis, marked secondary anemias, the throat picture above described, and other evidences of progressive activity not improved after long observation and varied treatment. As will be subsequently noted, they were nearly all in the third stage.

A review of the literature since 1667, when John Baptist Dennys reported the first authentic blood transfusion on man, reveals few and feeble efforts with this procedure, as far as tuberculosis is concerned. In 1921, Frelich reported indifferent results on six tuberculous patients transfused with 100 to 375 c.c. of blood at weekly intervals with from two to five treatments for each. In the American Review of Tuberculosis, January, 1929, Gamble reports a few cases of tuberculosis so treated with gradual improvement in appetite, hemoglobin, and general condition.

In our series comprising fifty cases, the donors were selected by the ordinary Moss classification. Cross matching was used in only a few of the recent cases. All had negative Wassermann reactions and care was taken as to their history and general clinical findings. The Lewisohn indirect method with citrated blood was used, and 500 c.c. given in most instances, and while it is true that some of the series coincidently received other treatments such as tuberculin, heliotherapy, and pneumothorax, we believe that the blood transfusion as an adjunct to their treatment had such definite value as to merit careful consideration. In a large percentage of this series the favorable improvement following the transfusion, in comparison with the unsatisfactory course they had experienced through long observation before transfusion, was certainly more than ordinary and in a few cases even spectacular.

With the assistance of Dr. Leroy Elrick, we have tabulated and classified both the immediate and subsequent individual symptoms and results in this entire series of cases over a period of seven years, but realizing both the confusing and misleading effect upon the listeners' mind of detailed symptoms, numerically expressed, I shall attempt to give you only the outstanding features of final results, both favorable and unfavorable, which seem to me to have been influenced by the transfusion. To put it in a condensed form it is clear to me that thirty-one of this series of fifty cases were materially improved by the transfusion, eleven were apparently unchanged, while five progressed unfavorably, and three had an anaphylactic reaction and were probably injured by the procedure.

A striking feature of the improved class was the *progressive* improvement in the blood picture. In almost every case the red cell count and the hemoglobin gradually increased for over a month. The polymorphonuclear cells were temporarily increased at the expense of the lymphocytes. The improvement in the laboratory findings was made more significant by the clinical observations of improvement in the temperature, pulse, cough, sputum, weight, and color of the skin, nails and mucous membranes. The sense of well-being with its associated cheerful mental attitude also deserves mention. These

*Read at a meeting of the Denver Sanatorium Association March 28, 1933, at The Swedish National Sanatorium, Denver, Colorado. Reprinted from Colorado Medicine, October, 1933. A Report of 50 cases.

features of improvement extended over much more time than one might ordinarily expect from a transfusion and seem to logically support the hematopoietic action of the new blood.

In consideration of the cases with unfavorable results, it should first be noted that they were all in the third stage, presenting extremely active and progressive symptoms, but the anaphylactic reactions we regret to record might possibly have been avoided by more careful cross agglutination. One of these died in seven hours after the transfusion, another in one month, and the third in seven months.

Small transfusions of 15 to 20 c.c. have seemed of real value in hemoptysis. We had four who stopped bleeding immediately, one shortly after and one in two weeks. Three of these have had no hemorrhage since, one had hemoptysis one year afterward, and two were recent cases.

We observed chills and fever of varying degree after the transfusion in thirty-seven cases, which seemed to have no deterrent effect on their subsequent progress.

Many interesting laboratory findings incident to blood transfusions appear in medical literature from time to time. Salant and Wise in 1917 reported sodium citrate as having been entirely thrown out of the blood stream within ten minutes after its introduction. Competent observers have variously determined the span of life of the introduced blood cells in their new location as being from ten to 113 days. The relative value of the actual increase of oxygen carriers and the hematopoietic stimulus of blood-building functions presents many potential phases, which, with refinement in methods, may mean much wider application of this procedure in the future.

Our experiences have indicated some suggestions and conclusions. The contraindications to the use of transfusion of blood in tuberculosis include pulmonary edema, advanced nephritis, and myocarditis, but in the complicating factor of nephritis, which is not of long standing, small transfusions may be of decided value. The possibility of there being a distinctive value in the blood of a cured tuberculous patient has been considered, and a record of a Von Pirquet reaction of donors would be of interest in this connection. I wonder whether it is the part of wisdom to confine this valuable procedure to third stage cases alone? If it had not been for the prohibitive cost to our patients we would have repeated the transfusions, for we believe this to be indicated. The patient having had one satisfactory boost, why should we not repeat it at carefully selected intervals? However, since anaphylactic reactions are reported in such repetitions, it is probable that the donor should be changed for each transfusion.

In the battle with the Koch bacillus there are times when the forces of resistance in the unfortunate victim seem only able to prevent advancement of the enemy. At just such critical periods, we have frequently observed that the arrival of the reinforcements of transfusion has resulted in victory instead of defeat.

In conclusion, may I repeat: Transfusion in pulmonary tuberculosis is neither a panacea nor a specific. But it is not a nostrum. We have no delusions that it will cure baldness or balance the national budget. But it is a procedure deserving greater and more intelligent use.

THE TUBERCULOUS PATIENT . . . . . (Continued from page 9)

probably not more than five to ten per cent of patients were given this added advantage, but today in some institutions fully 80 per cent are selected for some form of compression. Phrenicectomy, artificial pneumothorax and thoracoplasty play an important part in treatment, and the physician who fails to recognize this is criminally negligent and is not giving to his patient the best that medicine and surgery have to offer in the treatment of tuberculosis.

ABSTRACTS

This department is devoted to abstracts of articles carefully and judiciously selected by the Editorial Staff.

McCLENAHAN, W. U., and PAUL, J. R.: A Review of the Pleural and Pulmonary Lesions in Twenty-Eight Fatal Cases of Active Rheumatic Fever. Arch. Path. 8: 595.

The material in this study is based on 28 fatal cases of acute rheumatic fever showing signs of activity in the myocardium or endocardium. Active pericarditis was present at autopsy in 75 per cent and active pleurisy in 64 per cent of the cases. Pleurisy apparently is a specific manifestation of the rheumatic infection and is characterized by the nonsuppurative character of the exudate and absence of bacteria. This lesion resembles the rheumatic pericarditis. It is, as a rule, less extensive than pericarditis and associated with far less serious consequences. It manifests itself in a number of different forms but is generally accompanied by the accumulation of pleural fluid which may be hemorrhagic, particularly in young children, and is nearly always rich in fibrin. It bears a close resemblance to tuberculous lesions of the pleura but differs from this last infection in that it does not reveal a thickened hyalinized pleura as an end-stage.

There was noted also a definite tendency for the pleurisy to involve the neighboring area of the lungs producing a subpleural pneumonitis.

The authors have also studied the lesions that occur in and about the pulmonary vessels and have found in these patients that there are many arterial changes. They have noted particularly in the cases occurring in childhood the presence of focal or hemorrhagic lobular pneumonia exhibiting certain atypical features. These features differ from ordinary terminal lobular pneumonia. While not specific manifestations of rheumatic fever, these lesions seem to occur fairly commonly in the disease.

CECCHINI, A.: La bacillaemia nella tuberculosi. Riv. di Patol. e Clin. della Tubercolosi, 1, 267.

According to Loewenstein (1925) the frequency of bacillaemia in the three stages of tuberculosis according to the Turban-Gerhardt classification is as follows: first stage, 2 per cent.; second stage, 5 per cent.; third stage, 30 per cent. Rosenberg, using a special method which consisted mainly in collecting the blood in a solution of sodium citrate, obtained positive results in 100 per cent. of 50 cases of pulmonary tuberculosis, some of which were in the initial stage. Kurashige who examined the blood in 155 cases of pulmonary tuberculosis in various stages of the disease by the Staubli-Schitter method found a considerable bacillaemia (30 bacilli per field) in every case. He also examined the blood of 34 apparently healthy persons and found bacilli in 20. Of these 20 individuals 3 developed tuberculous pleurisy in the course of eight months, 2 had hemoptysis, and 4 of the rest produced positive results when their blood was inoculated into guinea-pigs. Kurashige, therefore, concluded that tuberculosis is a generalized infection from the first, even if it cannot be defined as a primary bacillaemia with secondary localizations in the organs. According to Kurashige the presence of tubercle bacilli in the blood is of great diagnostic value, but has no prognostic significance, as no relation can be shown to exist between the amount of bacillaemia and the course of the disease. On the other hand, there are numerous writers who maintain that bacillaemia is very rare in tuberculosis, except in the generalized miliary forms.

Cecchini comes to the conclusion that bacillaemia occurs more frequently in human tuberculosis than is supposed, and may account for some of the symptoms.

BLAKE, Francis G.: Observations on Pneumococcus Type I I I Pneumonia. Annals of Int. Med. Vol. 5, No. 6.

A consecutive series of 122 cases of pneumococcus type I I I pneumonia admitted to the New Haven Hospital during a ten year period is reviewed. Confirmatory of previous reports, it has been found that the incidence is greatest in the later decades of life, approximately 50% of the cases being over 55 years. Males were nearly twice as numerous as females. There was no special racial susceptibility found. The monthly incidence corresponded to that of pneumonia in general.

Acute predisposing causes played a very important part in the etiology of the disease, being of undoubted significance in 75% of the cases. The most frequent predisposing causes were the acute respiratory infections—common colds, grippe, and influenza. These immediately preceeded the onset of the pneumonia in 52% of the patients. Exposure, exhaustion, and acute alcoholism were recorded in 17%. Chronic disease existed in 66% of the patients and in all probability exerted a significant influence on susceptibility.

The onset, the clinical course and the symptomatology of the disease were similar to those of other forms of pneumococcal pneumonia. In young adult life in otherwise healthy individuals the disease ran a mild course with early critical recovery. In the later decades the disease ran a more prolonged course and recovery by crisis was the exception. Empyema occurred 6 times, pericarditis twice, endocarditis once, otitis media occurred 5 times in children. In spite of the high mortality, bacteremia was found in only 18.1% of 116 cases, in only 37% of the fatal cases.

Although the total mortality in this series was high, 44.3%, it is shown that this was largely determined by the factor of late age incidence and by the prevalence of chronic disease at all ages in those who succumbed. In 40 cases, not subject to chronic disease and irrespective of age, the mortality was only 15%, while in 79 patients suffering from chronic disease (including 2 with pregnancy) the mortality was 56.9%.

It may be concluded that pneumococcus type I I I pneumonia is a highly fatal specific infectious disease due, in general, not to a highly virulent organism that attacks and kills a healthy host, but rather to a debilitated, sickly or senescent host who succumbs to what is a relatively mild and uncommon infection in the young and vigorous.

PATON, R. T.: The Clinical Significance of Choroidal Tubercles. Annals of Int. Med. Vol. 5, No. 8, p. 997.

Choroidal tubercles seen by the opthalmoscope are of two types commonly known as (1) the granuloma or solitary tubercle, (2) choroidal miliary tubercles. The former is usually associated with chronic tuberculosis and the latter with acute miliary tuberculosis.

The granuloma or solitary conglomerate tubercle is a rare and destructive disease and is usually unilateral. It is probably always secondary to tuberculous disease in other parts of the body and is usually seen in the early years of life. It must be differentiated from malignancy, glioma, retino blastoma, etc. Enucleation should not be done until tuberculin treatment has proved unsuccessful.

Miliary tubercles of the choroid are frequent in miliary tuberculosis especially in the late stages. Various workers have reported incidence of from 20% to 80% involvement of the choroid in miliary tuberculosis. The percentages are much higher in tuberculous meningitis. Repeated examination is necessary since tubercles develop rapidly in the late stages.

The presence of miliary tubercles of the choroid is often a valuable aid before the laboratory tests have been completed, in making a diagnosis in cases suspected of being typhoid fever, meningitis, or miliary tuberculosis. The prognosis, of course, is grave.

HAYES, E. W.; The Prognosis in Tuberculosis with Especial Reference to the Psychological Aspects. Annals of Int. Med. Vol. 4, No. 9, p. 1183.

The prognosis in tuberculosis is, at best, uncertain because it depends upon so many different factors, such as age,

sex, habits, and opportunity to take the cure, which are more or less fixed, while others, such as the virulency of the infecting bacilli and the resistance of the one infected, not only differ in each case of pulmonary tuberculosis, but are changeable and are greatly modified by the way in which the patient adjusts himself to the cure and by the way he reacts to the cure. At the beginning of each case we can conceive of a certain virulency of the infecting bacilli and a certain resistance of the host prepared to wage a battle.

We cure tuberculosis by raising the resistance of the body against the inroads of the tubercle bacilli. The most important factor in raising this resistance is rest, and by rest we mean not only physical rest, but emotional and mental relaxation. A large percent of the factors influencing prognosis are psychological and have to do with the emotional, mental, and nervous reactions of the patient. We must realize that we are not dealing with normal individuals, but with people who, for the most part, are not only physically, but mentally and nervously sick. If we, as physicians, are to do our duty in aiding these patients to recover their health, we must study them and understand them individually and supervise them so that we can control these psychological factors, not only at the beginning of their illness but throughout its course, be it months or years.

Our first step from a psychological consideration, which makes for a favorable prognosis, is to truthfully explain to the patient the extent of his disease, as well as the nature and purpose of the cure. It is the uncertainties of life, whether they have to do with health or other serious matters, that cause worry, restlessness, and emotional disturbance, and a simple, but frank, explanation of the facts goes a long way toward establishing that bond of confidence which should exist between a patient and his physician.

Our second consideration is proper environment and this is particularly true of patients with tuberculosis because of the nature of the life they must lead, and because of the unstable condition of their centers of control. Consequently, tuberculous patients are better able to carry out the necessary details which make for a favorable prognosis when they are so placed that they have the moral support and mutual sympathy of those around them, and when they are under the continuous care and supervision of those who understand and appreciate their mental and nervous disturbances.

In tuberculosis there is no factor more important in the prognosis than time. Many patients who would otherwise recover lose their lives because they do not stick to the cure long enough. With few exceptions, patients who give up the cure too soon do so because we have not instilled into them the right prospectus of tuberculosis and the essentials of a cure. That is, we have failed to influence their trend of mind so as to hold them on the cure, consequently, our ability to properly advise, to intelligently guide and to efficiently manage our patient is the outstanding influence in bringing about a favorable outcome in pulmonary tuberculosis.

ADAMS, LEYLAND J.: Tuberculosis of the Aorta. Arch. Int. Med. 44: 711.

The case reported here is one of 33 to be found in the literature where tuberculous lesions have been found in the aorta. The present case is the twentieth instance of tuberculosis reaching the aorta by extension from a tuberculous process outside the aorta. In this case, the autopsy showed that the involvement extended to the media but that no rupture had occurred. The lesion had extended from an acute tuberculous involvement of the left pleura.

Clinically, syphilitic aortitis was suspected on account of the history, shortness of breath, pain, pallor and the positive Wassermann reaction.

COOPER, GEORGE F.: Post-Pneumonic Lung Abscess Resembling Lung Tumor. Annals of Int. Medicine, Vol. 5, No. 10, p. 1308.

It is difficult to differentiate an unresolved pneumonia from an encapsulated empyema in which the retained fluid is under pressure. It is also difficult, at times, to differentiate either of the two conditions mentioned above from a lung tumor. It is usually necessary to take into consideration not only the physical findings and X-ray examination, but the history of onset before an absolute diagnosis can be made.

Middle lobe pneumonia, without involvement of the remainder of the lung, is a rare condition, and may terminate in various ways. It may resolve and clear up in a very short time, or it may go on to supperation and gangrene. The condition may also break down into abscess formation and this collection of pus be later evacuated into a bronchus and drained.

Cooper reports an unusual case which was variously diagnosed as malignancy, encapsulated empyema, lung abscess, and finally resolving pneumonia. The patient was a white male, age 33, whose chief complaint was severe pain of the right chest of such intensity that he walked in a stooped position. The pain had been present in various degrees for three months, accompanied by a continuous fever with night sweats and early morning cough. Breath sounds were absent and percussion note was dull over the lower half of the right chest. X-ray revealed a dense shadow resembling that of a lung tumor.

The night after admission the patient was seized with a violent coughing spell which evacuated large quantities of odorless, greenish, purulent pus. The temperature dropped immediately to normal, and the patient continued to raise pus for about one month when he was considered entirely recovered. There were no tubercle bacilli in the sputum at any time. Guinea pig inoculation was also negative.

RIZER, ROBT. I.: Syphilis of the Lung. Annals of Int. Medicine, Vol. 3, No. 5, p. 452.

In the medical literature there are probably between two and three hundred authentic cases of pulmonary syphilis. This is interesting in view of the fact that about three percent of the entire adult population is syphilitic. There were 12 cases of lung syphilis in 2800 autopsies at John Hopkins Hospital, 12 in 4,480 autopsies in New York, and 29 in 5,456 autopsies in California. Syphilitic lesions of the lung are never early manifestations of the disease—appearing only in the advanced tertiary stage.

The pathology of pulmonary syphilis is similar to that of pulmonary tuberculosis. The acute and chronic types of the disease are found. The acute form with sudden onset of fever, cough with or without expectoration, dyspnea, weakness, and sweats is rare. In the chronic form miliary gummata occur, increase in size and number until consolidation exists. Organization may occur with formation of an abscess, cavity formation, gangrene, or fatal hemorrhage. More frequently there is regeneration of connective tissue especially about the bronchi and vessels. Such chronic form with a slow insidious onset, resembling a chronic tuberculosis in course, having little fever, weakness, loss of weight, cachexia, and dyspnea out of proportion to the physical findings is the type usually met with in medical practice.

X-rays usually show a unilateral infiltration involving the middle and lower lobes, beginning near the hilus and extending peripherally. The Wassermann is positive in about 50% of the cases. Spirochetes are not demonstrable in the sputum.

The usual vigorous anti-luetic treatment should be used. Prognosis of the lung condition is good unless the syphilis of some other part (aneurism, etc.) is too far advanced.

The author presents a case in a white single woman, aged 45, with chronic lung symptoms of several years duration. Wassermann was positive. X-ray showed a dense infiltration involving the right middle and lower lobes which was completely cleared with one year's intensive antiluetic treatment.

QUERIES AND ANSWERS

Careful attention given to all queries. Names will be omitted if so desired.
EDITORIAL OFFICES 1018 Mills Building, El Paso.

Q. Upon what does the incidence of childhood tuberculosis depend?

A. It depends largely on the amount of exposure to open, adult cases, that is to the amount of adult diseases in the community. Hence it is much more common in cities, in the crowded slums and now is becoming very common in certain rural districts because of crowding.

Q. How important is a positive skin reaction in a child?

A. It is very important — however, there is a wide spread impression among physicians that the tuberculin skin reaction is of little significance, and that practically all children after infancy are infected and give a positive reation. This is far from the truth. The tuberculin skin reaction gives us very definite information as to whether a given child has been infected or not. It must be remembered that a positive tuberculin skin reaction does not tell whether the disease is active or not; but merely that the individual has been infected at some past time. The diagnosis of activity must be made by the symptoms and X-ray examination.

Q. What are some of the characteristic clinical signs of childhood tuberculosis?

A. Fever is almost a constant sign of activity. Failure to gain weight at the proper rate, languor, anerexia and irritability. Increased growth of hair on the nape of the neck and arms, also long eyelashes. Phylctenules on the cornea are nearly always due to the toxemias of tuberculosis; photophobia may be the first suspicious signs. Tuberculides are significant. These occur on the trunk and accessory surfaces for the extremities; they are small raised lesions with a depressed center and they are mistaken for chicken-pox at times. They usually occur in crops at long intervals.

Q. What percent of children with positive skin reactions are also positive by x-ray?

A. It is estimated that only 20%. It must be remembered, however, that we must not depend upon the x-ray alone in picking out active cases. The best procedure is as follows:

First give the child a skin test and, if positive, seek for signs of activity, regardless of x-ray findings.

Q. Is pneumothorax used extensively in the treatment of children with pulmonary tuberculosis?

A. No. It is much less useful in children than in adults.

Q. Upon what does a prognosis of tuberculosis in children depend?

A. The resistance of the child, his race, economic status and method of treatment.

Q. Are the numerous substitutes such as tablets and concentrates of cod liver oil valuable?

A. None of them can replace pure cod liver oil; some of them may do harm from large amounts of vitamin D contained. There is no evidence that it is desirable to give enormous amounts of this substance. The same warning holds good against the over use of the ultra violet ray.

Q. Should a child be forced to eat?

A. No. Food should not be forced, and the child should not be coaxed, amused or bribed to eat. A meal should be put before him and nothing said about it. In half an hour it should be taken away and nothing given until the next feeding, no matter what has been left. In a few days he will eat willingly.

Q. Do cavities ever heal without the use of some surgical compression?

A. Yes, recovery from cavities is constantly taking place, although it may take place in some cavities, while others, in the same lung, may become larger.

Q. Is it true that in every person with a positive sputum that there is a cavity existing in the lung?

A. Yes, technically, this is true though the cavity may be microscopic in size, and of course, not demonstrable by either clinical or X-ray examination.

Case Report

By Dr. R. B. Homan

D. J. B., St. Paul, Minnesota.
Male: Age 42
Family and personal history irrelevant.

In December 1933 began coughing, had some pain in the upper part of the left side of the chest, found that we was having a slight rise in temperature especially in the afternoons. Felt rather badly all of the time. In about ten days from the onset of the symptoms began coughing and expectorating bloody sputum—never in large quantities but it kept up rather regularly each day. At the appearance of this bloody sputum he consulted his physician, who made a diagnosis of tuberculosis and advised that the patient enter our institution.

Early in February we were consulted. Physical examination revealed an area in the upper part of the left lung exhibiting moist rales and other evidence of some pathology in the lung. Roentgenograms showed an area of marked infiltration lying underneath the third and fourth ribs, with a small area of caseation in the center. Repeated examinations of the sputum were made but tubercle bacilli were never found. On two occasions, however, the laboratory technician found a few small granules or grains such as are present in the sputum in actinomycosis. We did not consider this sufficient evidence so a culture was made and a growth of actinomyces resulted.

Treatment consisted in the administration of rather large doses of Sodium Iodide, as a result of which the disease cleared up entirely after a few weeks. Two important facts are impressed by this case:

1. One must not be too hasty in making a diagnosis of tuberculosis because the patient is expectorating pus and blood following cough—even though there may be pain in the chest, afternoon fever, and other familiar signs and symptoms of that disease.

2. It is not an easy matter to find positive evidence of actinomycosis in the lung by microscopic examinations of the sputum, therefore cultures should always be made where there is any doubt.

TO OUR READERS!

. . . . . Feel free to send us your queries. The Editorial Staff of DISEASES OF THE CHEST will be pleased to give them due consideration.